

# Contents

<b>1</b>	<b>Introduction</b> .....	<b>1</b>
<b>2</b>	<b>Singular Perturbations of Classical Original Perron–Frobenius Operators on Countable Alphabet Symbol Spaces</b> .....	<b>19</b>
2.1	The Classical Original Perron–Frobenius Operator $\mathcal{L}_\varphi$ and Equilibrium States $\mu_\varphi$ , Thermodynamic Formalism; Preliminaries .....	19
2.2	Non-standard Original Perron–Frobenius Operator $\mathcal{L}_\varphi$ ; Definition and First Technical Results .....	23
2.3	Singular Perturbations, Generated by Open Holes $U_n$ , of the (Original) Perron–Frobenius Operators $\mathcal{L}_\varphi$ , I: Fundamental Inequalities .....	30
2.4	Singular Perturbations, Generated by Open Holes $U_n$ , of (Original) Perron–Frobenius Operators $\mathcal{L}_\varphi$ , II: Stability of the Spectrum .....	35
2.5	An Asymptotic Formula for $\lambda_n$ s, the Leading Eigenvalues of Perturbed Operators .....	41
<b>3</b>	<b>Symbol Escape Rates and the Survivor Set <math>K(U_n)</math></b> .....	<b>53</b>
3.1	The Existence and Values of Symbol Escape Rates $R_{\mu_\varphi}(U_n)$ and Their Asymptotics as $n \rightarrow \infty$ .....	54
3.2	Conditionally Invariant Measures on $U_n^c$ .....	56
3.3	The Variational Principle on the Survivor Sets $K(U_n)$ , I .....	59
3.4	The Variational Principle on the Survivor Sets $K(U_n)$ , II; The Existence of Surviving Equilibrium States and Their Stochastic Properties .....	62
3.5	The Variational Principle on the Survivor Sets $K(U_n)$ , III; The Uniqueness of Surviving Equilibrium States .....	79

<b>4</b>	<b>Escape Rates for Conformal GDMSs and IFSs</b> .....	87
4.1	Preliminaries on Conformal GDMSs .....	87
4.2	More Technicalities on Conformal GDMSs .....	94
4.3	Weakly Boundary Thin (WBT) Measures and Conformal GDMSs.....	97
4.4	Escape Rates for Conformal GDMSs; Measures .....	107
4.5	The Derivatives $\lambda'_n(t)$ and $\lambda''_n(t)$ of Leading Eigenvalues .....	116
4.6	Escape Rates for Conformal GDMSs; Hausdorff Dimension.....	135
4.7	Escape Rates for Conformal Parabolic GDMSs .....	141
<b>5</b>	<b>Applications: Escape Rates for Multimodal Maps and One-Dimensional Complex Dynamics</b> .....	147
5.1	First Return Maps .....	147
5.2	First Return Maps and Escaping Rates, I .....	149
5.3	First Return Maps and Escaping Rates, II .....	158
5.4	Escape Rates for Interval Maps .....	162
5.5	Escape Rates for Rational Functions of the Riemann Sphere.....	173
5.6	Escape Rates for Meromorphic Functions on the Complex Plane ....	183
<b>A</b>	<b>The Keller-Liverani Perturbation Theorem</b> .....	189
	<b>References</b> .....	195
	<b>Index</b> .....	199